

IPW

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01-31-2006

Tod T. Van Roy
Patent Examiner
USPTO

Re: Application/Control Number 10/762,980

Dear Mr. Van Roy,

Thank you for your communication mailed 11-16-2005. Please kindly consider our response to your communication.

Re: Required correction to ABSTRACT - MPEP 608.01(b). Please find enclosed a new text of Abstract; please substitute this enclosed version for the old objected version.

Re: Claims 1-8 are rejected under 35 USC 103(a) as unpatentable over Sukhman et al (US 5894493). We very respectfully disagree with rejecting Claim 1 for the following reasons.

It is not just flexible attachment of the laser tube to the end-plates that makes our current invention work. It is also the absence of the top and bottom plates as well as side-plate heat-sinks which are essential in Sukhman et al (US 5894493) invention.

Indeed, in Sukhman et al (US 5894493) invention the side plates are absolute necessity as heat-sinks serving to remove the heat from laser tube, while the top and bottom plates simply serve as a part of the mechanical enclosure for laser assembly. It is of supreme importance to provide exceptionally good mechanical contact between the side-plate heat-sinks and laser tube in Sukhman et al (US 5894493) invention in order to achieve acceptable heat transfer from laser tube to these side-plate heat-sinks. Note that significance of hard-clamping of side-plates onto laser tube is further enhanced by the fact that top and bottom surfaces of the laser tube are not



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cooled, i.e. all heat transfer from laser tube takes place only through the side surfaces. But at the same time these very side-plates need to be very flexibly fastened onto the laser tube in order to prevent mechanical deformations of laser tube by these very side-plates. Thus, it is obvious that there is a conflict between necessity of hard clamping of heat sinks for better heat transfer and a necessity of very flexible clamping of heat-sinks to eliminate laser tube deformation. This is a real and very practical problem with prior art RF excited laser designs like Sukhman et al (US 5894493).

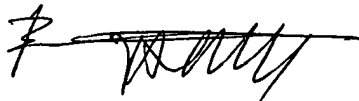
This problem in prior art like Sukhman et al (US 5894493) is resolved in our invention by eliminating the heat-sinks, i.e. laser tube in our present invention does not have the heat-sinks on its sides. This way we eliminate mechanical deformations caused by heat-sinks all together – which is unavoidable in Sukhman et al (US 5894493). At the same time, heat transfer from laser tube in our invention takes place through all four of laser tube sides, thus doubling the cooling efficiency of laser tube in our invention relative to Sukhman et al (US 5894493).

Furthermore, until our invention it was unthinkable and non-obvious for one of ordinary skill in the art to eliminate the heat-sinks from RF excited laser assembly design. We've made this non-obvious step of eliminating the heat-sinks on the sides of the laser tube and at the same time exposing all four sides of RF excited laser tube to forced air flow. By doing so we have both 1) achieved adequate heat transfer away from laser tube even without heat-sinks, and 2) eliminated laser tube mechanical deformations caused by heat-sinks.

Therefore we very respectfully ask to allow Claim 1.

Claims 2-8 are all dependent on independent Claim 1. Therefore we very respectfully ask to allow Claims 2-8.

Very respectfully,



Peter Vitruk